

CLAIMS

What is claimed is

1. A method for making measurements during drilling of a borehole, the method
2 comprising:
 - 3 (a) making measurements continuously with a formation evaluation (FE)
4 sensor on a bottom hole assembly (BHA) over a time period that includes
5 during said drilling of said borehole;
 - 6 (b) concurrently making quality control (QC) measurements while said FE
7 measurements are being made, said QC measurements including at least
8 one measurement not related to motion of said BHA;
 - 9 (c) storing samples of said FE measurements in a working memory of a
10 processor on said BHA;
 - 11 (d) analyzing said QC measurements; and
 - 12 (e) based on said analysis, storing selected samples of said FE measurements
13 in a permanent memory of said processor.
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1. 2. The method of claim 1 wherein said FE sensor comprises at least one hydrophone
2 responsive to a seismic signal from a surface source.
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1. 3. The method of claim 1 wherein said FE sensor comprises at least one geophone
2 on a non-rotating sleeve of said BHA, said at least one geophone responsive to a
3 seismic signal from a surface source.

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1 4. The method of claim 1 wherein said at least one measurement is selected from (i)
2 a weight on bit (WOB), (ii) flow rate of a fluid in said borehole, (iii) a level of a
3 tube wave in said borehole, (iv) a level of motion of a non-rotating sleeve on said
4 BHA, and (v) a measurement made by a near bit accelerometer.

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1 5. The method of claim 1 wherein said QC measurements further comprise a
2 measurement of motion of said BHA.

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1 6. The method of claim 1 wherein said FE sensor comprises an accelerometer
2 responsive to a signal from a surface source.

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1 7. The method of claim 1 wherein said FE sensor comprises an acoustic sensor
2 responsive to a signal from a source in another borehole.

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1 8. A method for making measurements during drilling of a borehole, the method
2 comprising:-
3 (a) making quality control (QC) measurements using a sensor on a bottom
4 hole assembly BHA during drilling of said borehole, said QC
5 measurements including at least one measurement not related to a motion
6 of said BHA;
7 (b) analyzing said QC measurements;

- (c) predicting an initial time when measurements made by a formation evaluation (FE) sensor on said BHA are expected to be of acceptable quality; and
- (d) making measurements with said FE sensor over a time interval that starts earlier than said initial time.

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9. The method of claim 1 wherein said FE sensor comprises an acoustic sensor responsive to a signal from a source at at least one of (i) a surface location, and, (ii) in another borehole.

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10. The method of claim 1 wherein said acoustic sensor is one of (i) a hydrophone, (ii) a geophone, and, (iii) an accelerometer.

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11. The method of claim 8 wherein said predicting is based at least in part on measurements made by an axial accelerometer on the BHA.

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12. The method of claim 8 wherein said predicting is based at least in part on monitoring of a mud flow in said borehole.